

by really beautiful woodcuts. This work marked an era in the study of zoology and comparative anatomy in our country. True it is that the information of the author was mostly borrowed; true that he had no great familiarity with the work of the German naturalists of the time; true that the book will not bear to be appealed to now: but forty years ago it was the best book of its sort in England, and the generation has not as yet quite passed away which learnt from its pages. We have altered since then, both in the manner and the matter of our teaching of comparative anatomy, and for the better no doubt; but after another forty years our systems may too have seen their day. It may be conjectured that this book was in advance of its day, for an eminent writer, in reviewing it in 1839, objected to Rymer Jones' facts about the Infusoria, and declared he still placed confidence in Ehrenberg's observations, while he criticised his description of *Volvox globator*, and believed this "Infusorian" had nutritive organs, mouth, eyes, &c.

Prof. R. Jones was an extensive contributor to Todd's "Cyclopædia of Anatomy and Physiology," writing no less than twelve of the articles on comparative anatomy. He was the author of at least one work on popular natural history, called the "Aquarian Naturalist." He was an excellent lecturer, and though never rising to the highest rank as a biologist, well deserves this passing notice in our columns.

FRANK BUCKLAND

FRANCIS TREVELYAN BUCKLAND was born on Dec. 17, 1826. He was the eldest son of the Very Rev. Dr. Buckland, Dean of Westminster. As a boy he was a constant companion of his father in the latter's geological excursions; he was a scholar of Winchester College and a student of Christ Church, graduating M.A. of Oxford in 1848. About this date he entered St. George's Hospital as a student of medicine, taking the diploma of the Royal College of Surgeons, London, in 1851, becoming house surgeon to St. George's Hospital, and lastly receiving the appointment of assistant-surgeon to the 2nd Life Guards, a position he held until 1863. He seems to have been always well liked in his regiment, gaining the character of a pleasant, good-natured, sociable fellow. Although fond of all that pertained to natural science, he was in no sense of the word a profound naturalist; he could seize with alacrity the popular side of a scientific question, but he seldom went deeper. Perhaps the most scientific work he ever accomplished was the editing, in 1858, of his father's work on "Geology and Mineralogy," published as one of the Bridge-water treatises. He was the author of some pleasant volumes entitled "Curiosities of Natural History," was a constant writer in *Land and Water*, and an occasional contributor on subjects of economic zoology to the daily press. On the subjects of fish and fish-culture he was an authority, and it will be remembered that he had an interesting museum in connection with the subject at South Kensington. For his labours in this direction he received several honourable distinctions from France, and in 1869 he was appointed by the British Government one of the Inspectors of Salmon Fishing for England and Wales. He was also one of the Commissioners appointed to inquire into the Crab and Lobster Fisheries of this country, and the results of this Commission culminated in the useful Act regulating the oyster, crab, and lobster fisheries of the kingdom, which received the Royal assent in 1877.

One notable event of his life was the discovery he made in 1859 of John Hunter's coffin in the vaults of St. Martin's-in-the-Fields, which was re-interred at the expense of the Royal College of Surgeons in Westminster Abbey.

Familiarly known by a large circle of friends as Frank

Buckland, he has left them while still in middle life, and it will be long ere they look upon the like of poor Frank again.

NEW GUINEA¹

II.

THE various accounts of the natives given throughout these volumes leave an impression of vagueness that is very unsatisfactory. The mixture of races in various parts of New Guinea is no doubt great, but we cannot help thinking that there is a well-marked Papuan type, and that its head-quarters are in this great island. Signor D'Albertis seems to attach too much importance to minor peculiarities. He continually mentions small differences in the features, the hair, the form of the skull, or the stature, as implying a radical difference of race, forgetting that such differences are found among every people and in every country, and that on this principle we might establish a dozen different "races" in Europe. Taking the term Papuan in a broad sense as including all the dark-skinned woolly or crisp-haired tribes of the Western Pacific, it seems clear that New Guinea is very largely peopled by this race, and that its north-western peninsulas contain the most typical examples of it. In the south-east however another race is found which may be described as yellow-skinned and smooth-haired, and these are clearly Polynesians or "Mahori," that is of the same race as the natives of Samoa and New Zealand. In the Fly River and adjacent country both these occur, as well as a mixed race, which D'Albertis seems to think is destined to supplant them. He describes these races as follows:—

"The two varieties to which I allude may be defined thus: the yellow, and the black. The term yellow does not exactly express the first, nor does black the second, and those adjectives must be used comparatively only. The characteristics of the yellow variety are as follows:—hair curling or smooth—neither crisp nor woolly, black and shining, often almost of a chestnut hue; forehead large and flat; temples little, if at all depressed; eye orbits scarcely, if at all, prominent; cheek-bones rather high; round chin and round face; large brown eyes, with eyeballs of a bluish-white; the nose often aquiline, never flattened, and generally small; lips moderately full; and brachycephalous and round skull. These people are not prognathous. In colour they vary from brown to very light brownish yellow. In stature they are not generally inferior to the black race, and their forms are fuller and rounder.

"The black variety is distinguished by a narrow and retreating forehead, compressed temples, strongly-marked orbital arches, prominent cheek-bones, aquiline nose, pointed and narrow chin, long face, decidedly prognathous, an oblong skull. The eyes are small, either black or brown, the eyeball bloodshot or yellowish, and the men are tall and generally thin. The preponderating type exhibits every gradation that can result from these two varieties.

"We may therefore conclude that the present inhabitants of Hall Bay (opposite Yule Island) are a mixture of two races, one dark-skinned and crisp-haired, the other with lighter skin and smooth hair; and this is all that can be said from our present knowledge."

The light race—which we may call Papuan Mahoris—are far more civilised than the dark Papuans. D'Albertis says of them:—

"The most perfect harmony seems to reign in families, and rare indeed are cases of quarrel among members of one household. They live in communities, sometimes of more than a thousand inhabitants, in well-built villages,

¹ "New Guinea: What I Did and What I Saw." By L. M. D'Albertis, Officer of the Order of the Crown of Italy, &c., &c. In two volumes. (London: Sampson Low, Marston, Searle and Rivington, 1880.) Continued from p. 155.

worthy to be called small towns, both for their order and cleanliness. They are under the rule of the chiefs or land-owners. The chief is looked upon as father of the family. He is called Pacao, and his servant or subject is called Irine. From all I could learn, slavery does not exist, and the sale of human beings is unknown." After describing their daily avocations, amusements, dress, implements, and ornaments (a group of which are figured), he goes on: "Their natural disposition is gentle and placid. They like to spend their time in talking and games, in which men and women take an equal share. Playful and free of speech, they nevertheless do not transgress the bounds of modesty, either in word or deed. Women and children are included in every conversation, and often take part in public discussions, which are usually held in the evening. Women are always respected, and in some villages they enjoy a certain supremacy, although the government of the house belongs to the husband. Labour may be said to be fairly divided between the two sexes, and they are accustomed to work from their earliest childhood. . . . The material for civilisation is in them, but will the change make them better? Will they be the happier for



FIG. 4.—Durabi, a native of Kiwai Island, at the mouth of the Fly River.

it? This is a difficult problem, and one which cannot be solved until the experiment has been made. For my part I do not doubt that these, more readily than any other savages whom I know, would answer to the call of a civilised nation which, stretching out a paternal hand, would lead them towards our civilisation! To insure success, however, they should be treated as friends, not as slaves; they should be cherished, not destroyed."

Unfortunately our attempts at civilising savages have as yet in every case failed. Are we still, notwithstanding all our wretched failures, to go on in the old way, and allow these interesting and now happy people to be first ruined morally by the teaching of the dregs of our Australian and Pacific traders, and then physically deteriorated by the forced introduction of a form of civilisation utterly unsuited to them? Cannot either philanthropy, or religion, or Government protect these people from all such external influences as have been proved to be unsuited to their condition and stage of development, while aiding them to work out for themselves an indigenous civilisation? Here is perhaps the last chance we have to preserve one remnant of the better class of savages from being crushed

under the Juggernaut car of our high-pressure civilisation and mad struggle for wealth.

The inhabitants of the lower part of the Fly River appear to be mostly dark Papuans, while further in the interior a mixed race was met with. Among the curious articles found in this part of the country were numbers of stone clubs, carved into various star-like shapes and forming terrific weapons in close combat. Stone axes are also largely used, closely resembling in form the neolithic celts of Europe.

Maino, chief of Moatta, a village at the mouth of the Fly, was a great friend of D'Albertis', and accompanied him on one of his voyages up the river. An elaborate study, both physical and mental, was made of this savage, and forms one of the best and most valuable passages in the book. A few extracts will show its character. After describing his person, our author goes on:—

"The above is a sketch of the animal Maino. I will now try to draw his portrait as a man, according to the moral sense of that definition. The opinion I have formed of him as a reasonable being is favourable. It is not however necessary to examine him very closely with European lenses, remembering that he is what we call a savage. He has sufficient intelligence for his position, and probably he is not capable of more. . . . He is friendly to the white man because he fears him, and because he knows he can gain by him. He is proud, and takes offence easily, without however showing that he is



FIG. 5.—Maino, Chief of Moatta

irritated; only once during two months and a half did he display any anger. He is generally silent, and seems meditative. Sometimes he is lively and will laugh, but his laugh appears studied and forced, not natural or spontaneous. He is cruel rather from instinct than from education, and in a way that we Europeans can perhaps neither understand nor appreciate justly. His cruelty raises him in his own estimation and in that of his dependents—in the eyes of his friends and of his enemies. He considers men and women, if they are strangers to him, good for nothing but to have their heads cut off. Up to the present time his victims number thirty-three. A warrior who bravely attacked him, or a woman sleeping in the forest would be to him exactly the same thing. He would see in each a trophy, a victory; and what he would esteem would be their skulls. He likes to see blood, and it is with marked satisfaction he describes the *modus operandi* in cutting off a head, the instruments used in the operation, and the method of surprising an enemy by treachery, even if a woman or a child. . . . He is tender and affectionate towards his own family, and to his sons at least his temper may be said to be mild. . . . Maino is remarkably selfish. He would willingly let others die of hunger if to relieve them he would have to sacrifice some delicacy intended for himself. I experienced this during the voyage. . . . Notwithstanding certain traits which might make him appear a bad man in the eyes of Euro-

peans, I can testify that Maino is a good fellow, and was a good comrade to us all. His rank and his age prevented his being useful except as a pilot, but in that capacity he was most valuable."

Turning to the lighter race, one of the most interesting and novel facts we find recorded of them is their most ingenious mode of cultivation. Fields were observed in Yule Island so well and evenly tilled that they appeared as if they had been ploughed, but it was afterwards ascertained that all had been done by manual labour.

"The natives form gangs of eight or ten men, each man holding in either hand a very hard wooden pole, sharpened to a point, over six feet long and from an inch to an inch and a half thick. These men stand in a row, and at a given signal plant their rods in the ground, re-

peating the operation several times until they have penetrated to the required depth, which is generally about a foot. This done, they bear down on the other end of the poles, making them act as levers, and thus loosen a long piece of ground, ten to thirteen yards long, and from a foot to a foot and a half wide; then by alternate heaving up and bearing down, the large mass of earth is upturned, and as they take care to preserve the same measurements and distances, regularity like that of the action of a plough is produced."

On his way home, fresh from New Guinea, Signor D'Albertis suffered partial shipwreck in the Red Sea, and met a number of Somauli men and their families, and was much struck by their resemblance to Papuans. He says: "Who will believe that in these people I seemed to be renewing my acquaintance with the natives of New

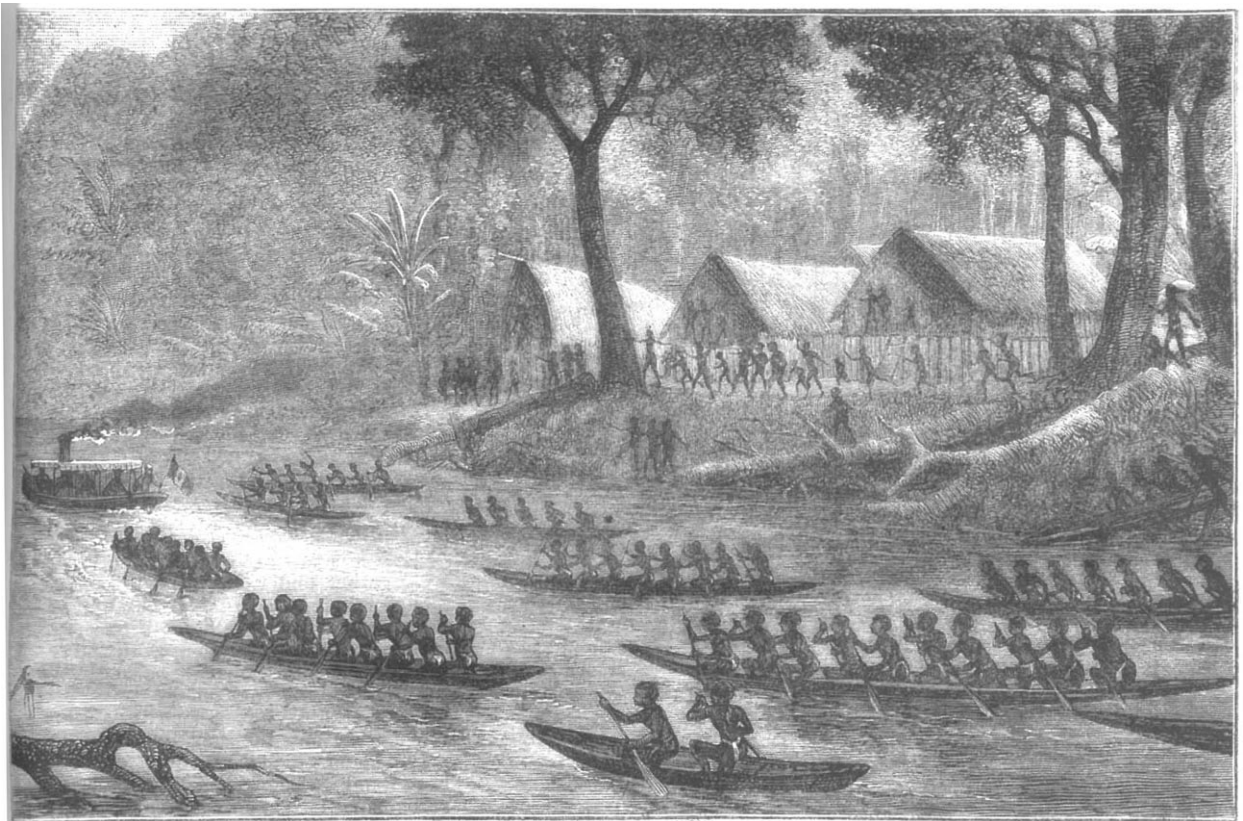


FIG. 6.—Attacked by Canoes on the Fly River.

Guinea, especially those of Torres Straits! Such is the impression they made upon me. I observed the true negro type, which differs from them in several respects; but if several of these natives were transported to New Guinea they might be mistaken for aborigines of that country; those with the receding forehead, aquiline nose, and moderately thick lips—who have curly but not woolly hair. They belong to the type I called Arab when speaking of Moatta and Tawan—the type which, although not predominating, I have often found in New Guinea, and I discover them to-day on the shores of Ras Afun." Our traveller had two true Jamaica negroes with him in New Guinea, and these also closely resembled other types of Papuans, although there were certain minute characteristics of skin and hair by which they could be distinguished. Taken as a whole, and speaking broadly, the Papuan and African races would appear to belong to the same great type of mankind.

Our readers will now perceive that, as the journal of an enterprising and observant traveller, Signor D'Albertis' work is one of considerable merit. It is written in a simple unaffected style, and bears internal evidence of accuracy and absence of exaggeration, while it no less clearly shows that in all the best qualities of a traveller its writer has rarely been surpassed.

Living among some of the wildest of savages he overcame them by kindness, courage, and by exciting in them a dread of his vast powers of destruction and command over the forces of nature; and he never took away human life except when attacked by overwhelming forces—when the vessel committed to his charge as well as the lives of its crew were in imminent danger on the Fly River, and even then he beat back his enemies while doing them the smallest possible injury.

Turning now from the general character of the book and of its author, and considering it as an expensive and

somewhat pretentious work brought out by an English publisher, we feel bound to state that it is full of grave defects. This is due probably to the incompetence of the editor, or the total absence of any such necessary functionary; for the original was written in Italian, and we cannot believe that the author himself corrected or supervised the proofs. In the first place a considerable number of the illustrations seem to be thrown in at random, and are not referred to at all in the text. Such are the portraits at pp. 59, 140, and 151 in vol. i. Ornaments and implements from the Fly River are figured in the first instead of in the second volume. A cut of thirty-four separate articles (at vol. i. p. 416), though all numbered, has no reference to the numbers; while at vol. ii. p. 136, four elaborate spears or ornamental staves are

and sometimes Oranhay. Waigiou is spelt Waigen, and immediately afterwards Waigeu. Battanta is spelt Battauta, and Daudai is spelt Dandai. At the end of the book four vocabularies of native languages are given, but as if to make these of as little use as possible, they consist of four different sets of words, all differently arranged, and none in alphabetical order; so that any comparison with each other or with vocabularies given elsewhere is practically impossible without the preliminary labour of rearranging them. Add to this that there is no index to the book and that the only map given is a poor and imperfect one, and it will be seen that the merits of Signor D'Albertis' work have not been enhanced by the manner in which it is presented to the reader.

The illustrations on the whole are good, the coloured plate of birds of paradise being excellent. But far too many skulls are figured, since these are of no possible interest to the general reader, while, as we have no guarantee for their accuracy, or that they are all figured on exactly the same scale, they will have little value for the man of science.

From the notices scattered through these volumes Signor D'Albertis appears to have made very large collections in natural history, especially of birds, reptiles, and insects. It is to be hoped that complete series of these have been kept together, and that, in conjunction with those collected by Dr. Beccari, they will be made the subject of some important works. The birds are being carefully elaborated by Prof. Salvadori; but the reptiles and the insects would probably throw even more light on the zoological relations and past history of this wonderful island.

ALFRED R. WALLACE

PHYSIOLOGY OF PLANTS

THE two papers¹ which we notice together under the above heading, though relating to different questions in the physiology of plants, have nevertheless something in common. Both of them bear on the relationship between the external and internal conditions of life, between external forces, such as light and gravitation, and the constitution of the organism on which these forces act. And both tend to show the importance of recognising in plants those specific forms of sensitiveness which may be said to determine the results which will follow external changes.

I. The behaviour of leaves in relation to light may be illustrated by the cotyledons of a seedling radish; if it is illuminated from above, the cotyledons are extended horizontally, and are thus at right angles to the direction of incident light. If the seedling is then placed at a window, so that it is lighted obliquely from above, and if the stem (hypocotyl) is prevented from bending, the cotyledons will accommodate themselves to the changed conditions by movements in a vertical plane. The cotyledon which points towards the light will sink, while the other will rise, and thus both will become once more at right angles to the incident light.

Two theories have been proposed to account for this

¹ I. "The Power possessed by Leaves of placing themselves at right angles to the direction of Incident Light." II. "The Theory of the Growth of Cuttings, illustrated by Observations on the Bramble, *Rubus fruticosus*." Read by Francis Darwin before the Linnean Society, December 16, 1880.

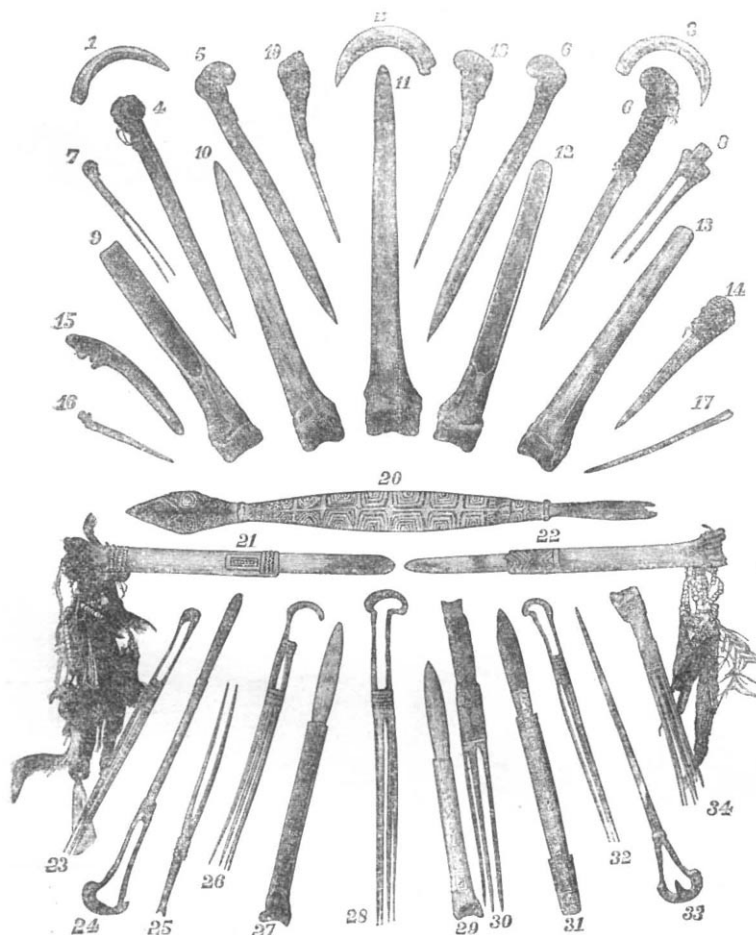


FIG. 7.—Implements and Weapons. From the Fly River (upper set) and Hull Sound (lower set).

described as "Baratus," which are said in the text to be "pieces of armour for war," and to be "worked in very hard stone"!

The misprints and misspellings are excessively numerous. At p. 4 we read of "temples excavated in the deserted roads" in Java. At p. 49 the traveller goes to the "source of the river" instead of to its mouth; and at p. 222 we have "stone nails" instead, probably, of stone clubs. The names of places and of plants and animals are rarely spelt correctly, and are often spelt differently in adjacent pages. The Italian mode of spelling scientific names has not been altered, and they are often almost unintelligible to an English reader, as *Oloturia* for *Holothuria*, *Stafilinus* for *Staphylinus*, and *Cicas* for *Cycas*. Orankaya (a village chief) is sometimes spelt Orankay